

PATENT

Serial No. 10/566,963

Amendment in Reply to Office Action of November 1, 2006  
And Notice of Abandonment of May 10, 2007

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of cleaning at least one surface (10) of an optical device (14) disposed in a vacuum chamber (12), which device is at least partially contaminated by atoms and/or ions (20) of metalloid and/or metal contaminants introduced by a radiation source, (18) generating, in particular, extreme ultraviolet radiation and/or soft X-rays (16), characterized in that the method comprising the act of:

adjusting at least one of a temperature prevailing on the at least one surface (10) and/or and a pressure in the vacuum chamber (12) is adjusted such that the atoms and/or ions (20) contaminants hitting the at least one surface (10) can are removed from a desired portion of on said at least one surface.

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2. (Currently Amended) A The method as claimed in claim 1,  
characterized in that wherein the temperature of the at least one  
surface (10) is set in a range from around 200°C to around 600°C.

3. (Currently Amended) A The method as claimed in claim 1,  
characterized in that at least further comprising the act of at  
least one of heating and cooling the at least one surface (10) of  
the optical device (14) is heated or cooled.

4. (Currently Amended) A The method as claimed in claim 1,  
characterized in that the atoms and/or ions (20) that can move on  
the surface (10) are halted and collected further comprising the  
act of collecting the contaminants at at least one obstacle (22)  
whose positioning can be predetermined located at a desired  
position.

5. (Currently Amended) A The method as claimed in claim 4,  
characterized in that wherein the obstacle (22) is at least one of

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an elevation (24) or and a recess (26).

6. (Currently Amended) A The method as claimed in claim 5,  
characterized in that wherein a shape of the elevation (24) takes,  
for example, has at least one of a strip-like, a cylindrical or  
and a peg-like shape.

7. (Currently Amended) A The method as claimed in claim 5,  
characterized in that wherein the elevation (24) is arranged so as  
to run approximately or fully parallel with the rays (16) emitted  
from the radiation source along the at least one surface (10).

8. (Currently Amended) A The method as claimed in claim 5,  
characterized in that wherein the elevation (24) is produced from,  
for example, includes at least one of copper, nickel or a and  
different further material promoting the configured to promote  
formation of accumulations (34) of the contaminants.

9. (Currently Amended) A The method as claimed in claim 5,

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~~characterized in that wherein~~ the elevation (24) is applied to the  
~~at least one surface (10)~~ of the optical device (14) by, for  
example, a CVD process.

10. (Currently Amended) A The method as claimed in claim 5,  
~~characterized in that wherein~~ the recess (26) ~~takes the form~~  
~~includes at least one of a slot, a or groove or is executed as and~~  
a hole.

11. (Currently Amended) A The method as claimed in claim 5,  
~~characterized in that wherein~~ the recess (26) is produced by, for  
example, ~~at least one of a photochemical process or by and a laser~~  
treatment.

12. (Currently Amended) A The method as claimed in claim 5,  
~~characterized in that wherein~~ a distance (28) in a range from a few  
μm to roughly one millimeter exists between the elevations (24)  
~~and/or recesses (26) elevation and the recess.~~

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13. (Currently Amended) A The method as claimed in claim 1,  
characterized in that wherein the atoms and/or ions (20)  
accumulated at the obstacle (28) contaminants are removed from the  
at least one surface (10) of the optical device (14), e.g. by a  
chemical process.

14. (Currently Amended) A The method as claimed in claim 1,  
characterized in that wherein the at least one surface (10) is  
provided with a coating.

15. (Currently Amended) A The method as claimed in claim 14,  
characterized in that wherein the coating is executed with a layer  
thickness of up to approximately 0.5 nm.

16. (Currently Amended) An appliance for cleaning at least one  
surface (10) of an optical device (14) disposed in a vacuum chamber  
(12), which device is at least partially contaminated by atoms  
and/or ions (20) of metalloid and/or metal contaminants introduced  
by a radiation source (18) generating, in particular, extreme

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~~ultraviolet radiation and/or soft X-rays (16), characterized in that, the appliance comprising at least one control device configured to adjust at least one a temperature prevailing on the at least one surface (10) and/or and a pressure in the vacuum chamber (12) is adjustable by means of control devices (30, 32) such that the atoms and/or ions (20) contaminants hitting the at least one surface (10) can move on are removed from a desired portion of said at least one surface.~~

17. (Currently Amended) ~~An~~ The appliance as claimed in claim 16, characterized in that wherein the temperature of the at least one surface (10) is adjustable over a range from around 200°C to around 600°C.

18. (Currently Amended) ~~An~~ The appliance as claimed in claim 16, characterized in that at least wherein the at least one control device is further configured to at least one heat and cool the at least one surface (10) of the optical device (14) can be heated or cooled.

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19. (Currently Amended) An The appliance as claimed in claim 16, characterized by further comprising at least one obstacle (22), with predetermined positioning on the at least one surface (10), for halting and collecting the atoms and/or ions (20) contaminants.

20. (Currently Amended) An The appliance as claimed in claim 19, characterized in that wherein the at least one obstacle (22) is includes at least one of an elevation (24) or and a recess (26).

21. (Currently Amended) An The appliance as claimed in claim 20, characterized in that wherein the elevation (24) takes, for example, has at least one of a strip-like, a cylindrical or and a peg-like shape.

22. (Currently Amended) An The appliance as claimed in claim 20, characterized in that wherein the elevation (24) is arranged so as to run approximately or fully parallel with the rays (16) emitted from the radiation source along the at least one surface

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{10}.

23. (Currently Amended) An The appliance as claimed in claim 20, characterized in that wherein the elevation (24) is produced from, for example, includes at least one of copper, nickel or a different and further material promoting the configured to promote formation of accumulations (34).

24. (Currently Amended) An The appliance as claimed in claim 20, characterized in that wherein the elevation (24) is applied to the at least one surface (10) of the optical device (14) by, for example, a CVD process.

25. (Currently Amended) An The appliance as claimed in claim 20, characterized in that wherein the recess (26) takes the form includes at least one of a slot, a or groove or is executed as and a hole.

26. (Currently Amended) An The appliance as claimed in claim

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20, characterized in that wherein the recess (26) is produced by, for example, at least one of a photochemical process or by and a laser treatment.

27. (Currently Amended) An The appliance as claimed in claim 20, characterized in that wherein a distance (28) in a range from a few  $\mu\text{m}$  to roughly one millimeter exists between the elevations (24) and/or recesses (26) elevation and the recess.

28. (Currently Amended) An The appliance as claimed in claim 16, characterized in that wherein the atoms and/or ions (20) accumulated at the obstacle (22) can be contaminants are removed from the at least one surface (10) of the optical device (14), e.g. by a chemical process.

29. (Currently Amended) An The appliance as claimed in claim 16, characterized in that wherein the at least one surface (10) is provided with a coating.

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30. (Currently Amended) An The appliance as claimed in claim 29, ~~characterized in that~~ wherein the coating is up to approximately 0.5 nm thick.

31. (New) A device for keeping a surface clean from contaminants disposed in a chamber comprising:

at least one obstacle formed on the surface; and  
a controller configured to adjust at least one of a temperature of the surface and a pressure in the chamber such that the contaminants are moved toward the at least one obstacle.

32. (New) The device of claim 31, wherein the at least one obstacle includes at least one of an elevation and a recess of the surface.